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Historic Dundee Dam on Passaic River eyed for hydropower

Friday March 1, 2013, 12:32 AM

BY JAMES M. O'NEILL

STAFF WRITER

The Record

Print | E-mail The Dundee Dam, which spans the Passaic River from Clifton to Garfield, was such an engineering marvel when it opened in 1859 that New York newspapers sent correspondents to describe the structural feat. The dam was designed to fill a 2-mile canal parallel to the river to give ships easy passage.

RECORD FILE PHOTO

The Dundee Dam, built in 1859 on the Passaic River, had a power plant in the past. But the ships never came — and the canal went bankrupt.

Both dam and canal found a new purpose in the 1880s when factories sprang up along the river and drew power from it. By the end of World War II, however, many of the factories had shut and the canal became a slimy mess.

There was a brief revival about 30 years ago, when the dam became the site of a mini-power plant. But the turbines were loud and so much water was diverted that the river's flow over the dam dried to a trickle. The plant shut down amid complaints about how it hurt the Passaic's natural beauty.

Now comes another proposal for the old site. United Water, the region's largest water provider, is studying whether to rebuild the hydroplant to generate electricity and sell it. The plant could create 1 megawatt of electricity each day, enough to power 1,000 homes, said Steven Goudsmith, a spokesman for United Water.

It would join just a handful of hydroelectric facilities in New Jersey and fit in with Governor Christie's goal of generating 70 percent of the state's electricity through "clean" sources by 2050.

The plant would be small by industry standards, and United Water does not know how much revenue it could raise by selling the electricity to the regional power grid. Hydroelectric facilities typically run at just below 40 percent capacity. Using last year's pricing, a 1 megawatt site might generate \$165,000 in annual revenue.

The study should be completed by midyear, officials said.

While the 1980s attempt to harness the Passaic for electricity was unpopular, the new proposal has drawn more favorable reaction.

"If they can produce electricity there, why not do it?" said Bill Sheehan, the Hackensack Riverkeeper. "They won't be burning oil, coal or gas — hydropower is much cleaner than fossil fuels."

Garfield Mayor Joseph Delaney agreed. "I would just want to make sure it didn't cause any flooding upstream," he said.

He also would want to make sure that some river water continued to flow over the dam, since it provides an important aesthetic element for Garfield's new ribbon park along River Drive. "It's absolutely gorgeous, and you'd need the water flowing to get the full effect," Delaney said.

Ella Filippone, executive director of the Passaic River Coalition, is a proponent "if they can deal with the safety issue." A collection basin at the old plant attracted children when it was idle, putting them in jeopardy of being sucked into the turbines if the plant fired up unexpectedly, she said.

Some environmental groups have pushed to remove old dams from rivers and streams across the country because they sometimes exacerbate flooding and hamper the migration of spawning fish. But the Dundee Dam serves an environmentally useful purpose.

Downstream, the river's sediment is laced with toxic materials, including mercury and cancer-causing dioxin dumped by factories in Newark. Below the dam, the Passaic is tidal since it connects to Newark Bay. For decades, that tidal action has spread the tainted sediment up and down the river, and humans are barred from eating fish caught in that 17-mile stretch. But the 20-foot-high dam, which stretches 450 feet across the Passaic, acts as a barrier to keep the toxic material from moving farther upstream.

The state sued the companies that owned the factories to force a cleanup and the companies countersued in 2009, claiming that river towns also polluted the Passaic. A proposed settlement would remove the towns from the case.

One recent afternoon, water cascading over the stepped dam roared with the ceaseless fury of rush hour on the turnpike. Several huge tree trunks, snagged on top of the dam, extended out over the abyss as if frozen in mid-plunge. Below the dam, ducks and seagulls bobbed through the river's shallow rapids as if enjoying an amusement park ride.

When the American Hydro Power Co. operated the turbines in the 1980s and the dam's scenic waterfall dried up, mayors said the towns' most scenic view had become a stagnant pool filled with dead fish that attracted rodents and disorderly teenage drinkers. They said it smelled like a sewer.

American Hydro Power also wanted to install flash gates on the dam to raise the water level two feet so it could force more water through the turbines, but Paterson and other upstream towns worried that would cause flooding. The flash gates were never installed.

The project did poorly financially, and the turbines went silent.

United Water's Goudsmith said today's turbines are far quieter and the company has no plans to raise the height of the dam. How much water would be diverted and how much would be left to flow over the dam will be determined in the final design, he said.

Only a few hydro facilities operate in New Jersey, according to the state Board of Public Utilities — including a small one at the Columbia Dam on the Delaware River in Warren County that produces 530 kilowatts a day, and the rehabilitated facility at Great Falls in Paterson, which generates 3 mega-watts a day. Paterson leases that facility to the Algonquin Power and Utilities Company of Canada, which specializes in clean renewable energy projects. It sells the electricity to PSE&G for the regional grid.

About 9 percent of all electricity generation in the U.S. — 96,000 megawatts — comes from hydro facilities, according to the U.S. Energy Department. The department estimates that the nation's undeveloped capacity is 30,000 megawatts. The largest hydropower facility in the United States is the Grand Coulee Dam, which spans the Columbia River in Washington State and can generate 6,809 megawatts of electricity. Other large hydro facilities operate at Niagara Falls and the Hoover Dam, which holds back the Colorado River near Las Vegas.

United Water and the North Jersey District Water Supply Commission, co-owners of the Dundee Dam facility, would need to obtain state and federal permits to proceed with a facility in Clifton.

"I think hydroelectric is a good idea," said Clifton Mayor James Anzaldi. "I don't think you'd want to lose the look of the water going over the dam. It's a beautiful site. The Passaic and the dam have a lot to do with our history."